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## ***Moderating role of learning strategies through student assessment of distance learning***

**Abstract:** *The growing use of communication and information technology (ICT) allows for the improvement of distance learning, at the same time challenging teachers to apply ICT effectively in designing interactive lessons which would involve all students as active participants. Students should be able to monitor themselves by self-regulating and exerting control over their learning, taking responsibility, and directing the process.*

*The aim of the research is to explore students' evaluation of distance learning, as well as the strategies they apply in the learning process, while also determining the connection between their assessment and strategy use. The Student Evaluation of Online Teaching Effectiveness (SEOTE) was used to examine the students' evaluation of online teaching, while the Motivated Strategies for Learning Questionnaire (MSLQ) was used to examine the use of motivated learning strategies.*

*The results show that students who feel more confident in learning, who set internal goals and are able to self-regulate, evaluate online teaching more positively. Furthermore, students who use cognitive strategies more often rate communication with teachers higher and report spending more time on mastering the content and completing academic assignments. On the other hand, students who experience test anxiety tend to avoid working with peers. These findings imply that students with higher levels of self-efficacy, intrinsic motivation, self-regulation, and strategy use give higher rates to the overall quality of online teaching, while anxiety hinders social interaction and joint learning.*

**Keywords:** *learning strategies, metacognitive self-regulation, motivation, distance learning*

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## **Introduction**

Teaching and learning via the internet are becoming more common, especially in higher education institutions. The development of technology enables universities to explore the possibilities of distance (online) learning to meet the needs of students who cannot or do not want to attend classes in person (Bangert, 2004). The COVID-19 pandemic led to a sudden transition to distance learning. Teachers had to adapt to online teaching very quickly, which highlighted the need for the professional development of teaching staff, educational reorganization, including the development of digital competencies of teachers and the reorganization of educational institutions (Flores, 2020; van der Spoel et al., 2020). The effects and consequences of the COVID-19 pandemic in education remain to be seen. The current situation creates and even worsens inequality in access to education, but also provides opportunities for reshaping the education system and additional teacher education (Flores, 2020). The “new normal” announced in the education system brings with it doubts, challenges, questions, but also opportunities.

According to Sangeeta and Tandon (2020), teachers have faced a number of challenges in transitioning to online teaching. One of the biggest challenges has been to actively involve students in the process of teaching and learning, emphasizing the need to design lessons which will enable the acquisition of new content and students’ active participation in learning. Teachers needed to invest time in improving their classes, grading, and interaction with students, as well as interaction among students (Sangeeta & Tandon, 2020).

A significant amount of research has been conducted with the aim of establishing the variables which influence learning in the context of higher education (Bangert, 2004), including distance learning. The question arises as to what improves student learning, especially when information and communication technology (ICT) is used in teaching.

Nowadays, most teachers are digitally literate, but it is still important to explore the ways in which ICT can be efficiently and meaningfully applied in the classroom (Angeli & Valanides, 2009; Ertmer & Ottenbreit-Leftvicht, 2010; van der Spoel et al., 2020). Not all educators perceive ICT in the same way. The efficiency of ICT application in teachers’ previous experiences creates attitudes towards computer use in education and prospective computer use (So et al., 2012).

To ensure high quality education, it is necessary to apply assessment instruments for student evaluation of effective teaching which provides teachers with valuable insight into the quality of their classes (Bangert, 2004; Marsh & Roche, 1997). Carefully constructed assessment instruments should be reliable, valid, multidimensional, nonbiased, and useful for the improvement of teaching practices (Marsh, 2001; Young, 2006).

## **Literature review**

The seven principles of effective teaching, constructed by Chickering and Gamson (1987), represent the most well-known list of variables affecting student learning. It was determined that the success of learning depends on encouraging the following components: “1) student-faculty contact; 2) cooperation among students; 3) active learning; 4) prompt feedback; 5) time on task; 6) high expectations; and 7) respect for diverse talents and ways of learning” (Bangert, 2004). Most teaching activities based on these seven principles are in accordance with constructivist teaching practices (Bangert, 2004).

The principle of active learning involves the organization of authentic learning activities to promote effective learning in which students can relate their experiences to previous knowledge (Bangert, 2004; Hacker & Niederhauser, 2000). Authentic learning activities also facilitate interactive learning and high expectations in students (Bangert, 2004). The teacher’s role involves the shaping and managing

students' experiences in the classroom, with the aim of encouraging students' thinking activity. The purpose of teaching is for a student to be a creative participant who, in cooperation with peers and teachers, takes part in the preparation, planning, implementation and evaluation of the learning process (Perić Prkosovački, 2015).

The principle of cooperation among students is in accordance with the constructivist viewpoint that social interaction facilitates learning (Bangert, 2004; Svinicki, 2002), since students understand the content better when they have the opportunity to talk with their peers while solving problem tasks in which they need to apply newly acquired knowledge and skills (Bangert, 2004; Millis & Cottrell, 1998). Social interaction among students helps them to organize and clarify questions and ideas and notice how their theories differ from those of their peers. The collaboration process can lead to knowledge formation or to modification of original ideas based on feedback from others (Gibson & Skaalid, 2004).

According to constructivism, students should be responsible for their own learning by taking control over the process (Bangert, 2004; Jonassen, 2003). Prompt feedback encourages students to be responsible for their level of self-efficacy, i.e., their self-confidence in solving tasks (Bandura, 1986; Bangert, 2004; Jackson, 2018). Self-efficacy facilitates participation in class activities (Huang, 2008; Zimmerman, 1995) and enables students to exert control over their learning process by observing and evaluating their own learning, including the time they spend studying, perseverance in solving difficult tasks, and quality evaluation of their own work (Bangert, 2004; Pajares, 2002).

Academic self-efficacy and the sense of control also rise when students have the opportunity to choose and participate in the organization of class activities because each student has different talents, preferences and experiences in learning. It is important to take into consideration that students' motivation for learning is one of the subfactors of self-effi-

cacy. In other words, self-efficacy should not be overlooked when exploring learning motivation because it facilitates learning (Pajares 1996; Shin, 2018; Shunk & Pajares, 2004) and is a very significant predictor of academic performance and achievement (Jackson, 2018). Teaching methods directed at students are ideal because they enable students to organize their own learning content. However, the use of technology in designing effective teaching activities represents a significant challenge (Bangert, 2004). Bangert (2004) believes that the aforementioned principles can be applied in the design of online courses but emphasizes that the evaluation of this type of teaching is a very valuable source of information for teachers whose task is to provide quality activities.

Bangert (2004) conducted research with the aim of determining in which way the student evaluation via questionnaire can contribute to the improvement of online teaching quality. The questionnaire was constructed based on the *Seven principles of effective teaching* according to constructivist principles. The results established that the contact between students and teachers is a crucial factor which motivates students to achieve best possible results. Successful communication with teachers creates a pleasant and safe environment for students when they need help with solving tasks. The majority of students positively evaluated their interaction with teachers during the online course. The results also showed that online activities encouraged interaction and cooperation among students, since the course was designed to implement joint learning activities, facilitate interaction, and provide opportunities for discussion (Bangert, 2004).

Furthermore, it was established that online teaching facilitates active learning since students reported that they were encouraged and motivated by class activities to engage in tasks and discussion, and to exert control over their learning process (Bangert, 2004). The factor which also facilitates active learning is receiving prompt feedback from teachers. Additionally, participants reported that, besides prompt

feedback, teachers also offered support and improved motivation in their students (Bangert, 2004). When it comes to time spent on solving tasks, most students reported that the course was well organized and efficiently taught, and that learning activities could be carried out in different environments (Bangert, 2004). Regarding students' and teachers' expectations, participants reported that course requirements were clear and precise, while the content and tasks were of an appropriate level (Bangert 2004). Finally, a significant number of participants reported that the teacher was willing to adapt to their needs and design activities which would cater to different types of learning (Bangert, 2004).

After the initial research in 2004, Bangert (2006) conducted another research in order to establish the psychometric properties of the Student Evaluation of Online Teaching Effectiveness (SEOTE) questionnaire, including factor analysis. Research showed that, from *Seven principles of effective teaching*, four factors were the most relevant: student-faculty contact, cooperation among students, active learning, and time on task (Bangert, 2006).

Bangert (2006) believes that these four factors are in accordance with the psychological principles of learning directed towards students, creating an optimal learning environment (Bangert, 2006; McCombs & Vakili, 2005). Namely, the interaction between students and teaching staff involves the teachers' ability to pass knowledge, encourage strategic thinking and organize online communication, discussion, and appropriate tasks (Bangert 2006; Pajares, 2002), which can raise learners' self-confidence and provide opportunity to find solutions to possible issues in the learning process (Đokić et al., 2021). Concerning student cooperation, the teacher should successfully incorporate activities which require joint work and interaction for quality distance learning. Time on task involves the assessment of course effectiveness and task difficulty. Setting attainable goals encourages students to monitor their learning, invest more effort and persevere even when the task is challenging (Bangert

2006; Pajares, 2002). Active learning involves student perception of quality online activities organized in such a way that they promote authentic experiences, enabling them to apply knowledge in everyday situations (Bangert, 2006).

Considering the results of Bangert's study (2006), it can be concluded that the SEOTE questionnaire provides important feedback for teachers about their students' perception and allows for improvements in online teaching practices (Đokić & Perić Prkosovački, 2021; Ravenscroft, Luhanga & King, 2017). Even though the SEOTE was published "more than ten years ago", it remains one of the most validated instruments for online teaching assessment (Reyes-Fournier et al., 2020).

Learning in person and online should be dynamic and interactive processes which involve cognitive, emotional, and behavioral functions, so that an individual is an active participant in their education. In that sense, students oriented at achieving a certain academic goal, by acquiring learning strategies, can significantly influence the results in different phases of learning (Mazzetti et al., 2020). What is more, the acquisition of self-regulated learning correlates with the use of learning strategies. Teachers can instruct students on different learning strategies, but they will not be skilled in using these metacognitive tools if they are not able to self-regulate learning (Khan & Rasheed, 2019).

To examine student motivation and strategy use, the Motivated Strategies for Learning Questionnaire (MSLQ) by Pintrich and de Groot (1990) was used. According to the authors, the questionnaire includes three components of motivation which can be linked to three components of self-regulated learning: "(a) an expectancy component, which includes students' beliefs about their ability to perform a task, (b) a value component, which includes students' goals and beliefs about the importance and interest of the task, and (c) an affective component, which includes students' emotional reactions to the task" (Pintrich & de Groot, 1990).



According to Duncan and McKeachie (2005), the MSLQ was constructed in accordance with the social-cognitive understanding of motivation and learning strategies which conceptualizes the student as an active participant in learning whose beliefs and cognition influence the process. The social-cognitive view suggests that motivation and learning strategies are not inherent traits. Instead, they can be dynamic, dependent on context, and controlled by the learner (Duncan & McKeachie, 2005). Pintrich and de Groot (1990) constructed and tested the questionnaire to determine the connection between motivational and self-regulated learning components, the interactions among these components, and how they affect student performance in academic activities. Factor analysis identified three distinct factors of motivation – self-efficacy, intrinsic value, and test anxiety, and two cognitive scales – cognitive strategy use and self-regulation (Pintrich & de Groot, 1990). Students' academic performance was assessed by gathering data on performance in classroom activities in three categories: in-class and homework tasks, quiz and test questions, and essays and reports (Pintrich & de Groot, 1990).

Based on the results obtained by Pintrich and de Groot (1990), it was determined that motivational components had significant connections both to students' cognitive engagement and class performance. Academic self-efficacy had a positive effect on cognitive engagement and performance. In other words, students with a higher level of self-efficacy were more likely to use cognitive strategies, apply self-regulation and metacognitive strategies, and persevere in solving difficult and wearisome tasks. Furthermore, the connection between an intrinsic value and cognitive strategies and self-regulation was established, meaning that students who were motivated to learn and found the material engaging and relevant were more likely to apply cognitive strategies, self-regulation, and to persist in solving tasks. On the other hand, cognitive variables proved to be more accurate predictors of academic performance. Namely, students who reported the use of cognitive strategies and self-

regulation also achieved better academic results, provided that they knew when and how to apply these strategies properly. Finally, test anxiety was not connected to the use of cognitive strategies or self-regulation but exhibited a negative effect on academic self-efficacy and performance (Pintrich & de Groot, 1990). The authors concluded that self-regulation in learning is in close relation to academic self-efficacy and beliefs about the relevance of tasks. On the other hand, self-regulation seems to have a more significant influence on performance than efficacy beliefs, meaning that students need to be taught both the skills and the proper ways of using them in the classroom (Pintrich & de Groot, 1990).

Cook, Thompson and Thomas (2011) evaluated the validity and test-retest reliability of the MSLQ for measuring student motivation. The scores showed "good to excellent external consistency reliability" and "moderate" reliability. The authors conclude by recommending that the original MSLQ should be used and further tested in new learning contexts and with new students (Cook, Thompson & Thomas, 2011), considering that it has been translated into numerous languages and used in different cultures (Duncan & McKeachie, 2005), while remaining valid and reliable (Erturan İlker, Arslan & Demirhan, 2014). Furthermore, the MSLQ can be used for different purposes: for researchers to conduct various types of studies, for teachers to evaluate the quality of courses, and for students to evaluate their learning process (Duncan & McKeachie, 2005).

## **Methodology**

### ***The aim of the research***

Considering that, since the COVID-19 pandemic, online teaching has become and remained a very common type of teaching on its own or in combination with teaching in-person, the researchers wanted to explore the success of its implementation at the University of Novi Sad. The study focuses on student assessment because their feedback can of-

fer a valuable insight into practices which need to be improved. Apart from identifying the areas which call for improvements, the researchers also wanted to offer the ways in which teachers can work together with students to raise the quality of classes. Having in mind that motivated learning strategies can significantly impact learning outcomes (Mazzetti et al., 2020), while self-regulation facilitates the application of these strategies (Khan & Rasheed, 2019), acquiring these skills may prove beneficial to student performance in online settings, resulting in satisfaction with class practices. Therefore, the aim of the research is to examine the students' assessment of distance learning, as well as the strategies they use in the learning process, and to determine the connection between their assessment and strategy use. The authors hypothesize that a positive evaluation of distance learning corresponds with the active application of learning strategies, and vice versa. The findings of the research could identify significant predictors of effective learning during online teaching, which would provide a basis for support of students and teachers through continuing education of all participants in learning. Furthermore, the research will identify the most relevant factors of the Student Evaluation of Online Teaching Effectiveness (SEOTE) (Bangert, 2004; Bangert, 2006) and the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich & de Groot, 1990), including the connections between these factors, within the context of online teaching at the University of Novi Sad.

This research deals with the students' evaluation of online teaching and their use of motivated learning strategies. To examine the students' assessment of online teaching, the Student Evaluation of Online Teaching Effectiveness (SEOTE) was used (Bangert, 2004; Bangert, 2006). The SEOTE is a self-report questionnaire on a 6-point Likert scale ranging from "1 = *strongly disagree* to 6 = *strongly agree*" (Bangert, 2004; Bangert, 2006). To examine the use of motivated learning strategies among students, the Motivated Strategies for Learning Questionnaire (MSLQ) was used (Pintrich & de Groot, 1990).

The MSLQ is also a self-report questionnaire, on a 7-point Likert scale ranging from "1 = *not at all true of me* to 7 = *very true of me*" (Pintrich & de Groot, 1990). The instruments were modified by translating them from English into Serbian to ensure the proper understanding of all questions.

The sample in the study included 226 students of the University of Novi Sad, Serbia. After obtaining the consent from the Ethics Committee, the questionnaires were distributed electronically via Google Forms. The participants voluntarily responded to online questionnaires. They were informed that the research was anonymous and their answers would be used solely for research purposes and publication in a scientific journal.

#### ***Socio-demographic characteristics of the examined sample***

The sample included 226 students at the University of Novi Sad. Most of the participants were female (around 77%). At the moment of completing the survey, the highest percentage of participants were in their second year of study – 50.4%, while there was 8.4% of first-year students. Furthermore, 16.4% of students attended third year, and 18.1% attended the fourth. Only 6.6% of students were in their fifth year of study.

#### ***Statistical data analysis***

The Statistical Package for the Social Sciences (SPSS) 20.0 program was used for the entry and analysis of the data. To analyze and describe the structure of the sample in accordance with relevant variables, frequency and percentage displays were used to determine the presence of a certain category or answer. Descriptive statistics methods were implemented to establish the measures of central tendencies (arithmetic mean), variability (standard deviation) and extreme values (minimum and maximum) of the observed numerical characteristics. In the domain of comparative statistics, the following techniques were applied: 'Student's' t-test for inde-

pendent samples and Pearson's linear correlation coefficient. In the implemented tests, limits of risk probability are at the significance level of 95% ( $p < 0.05$ ) (significant difference in statistical parameters) and 99% ( $p < 0.01$ ) (highly significant difference in statistical parameters). The measure of internal consistency expressed by the Cronbach's alpha coefficient was used to assess the reliability of the scale as a whole.

## Results

### Reliability of the questionnaires

The internal consistencies of the Motivated Strategies for Learning Questionnaire (MSLQ) and Student Evaluation of Online Teaching Effectiveness (SEOTE) were evaluated by calculating the Cronbach's alpha coefficient. The results of the evaluation are shown in Table 1.

Table 1. Measure of scales reliability

		Number of items	Cronbach's alpha
MSLQ	Intrinsic motivation	9	.783
	Self-efficacy	9	.773
	Test anxiety	4	.759
	Cognitive strategy use	13	.781
	Self-regulation	9	.697
SEOTE	Student-faculty interaction	10	.932
	Student cooperation	3	.778
	Active learning	4	.899
	Time on task	7	.842

\* MSLQ – Motivated Strategies for Learning Questionnaire; SEOTE – Student Evaluation of Online Teaching Effectiveness

Based on the data obtained in this research, it was determined that the reliability of the domains of the Motivated Strategies for Learning Questionnaire (MSLQ) ranged from  $\alpha=0.697$  to  $\alpha=0.783$ . These measures are considered acceptable. Regarding the domains of the Student Evaluation of Online Teaching Effectiveness (SEOTE), the coefficients of internal consistency (Cronbach's alpha) proved to be excellent in all four domains and ranged from 0.778 to 0.932.

### Description of the participants' answers to the subdomains of the questionnaire

Table 2. Mean values and basic characteristics of the scales of the questionnaires

	min	max	AM	SD
Motivated Strategies for Learning Questionnaire (MSLQ)				
Self-efficacy	2.33	6.44	5.08	0.69
Intrinsic motivation	2.56	6.89	5.08	0.79
Test anxiety	1.75	7.00	4.40	0.96
Cognitive strategy use	3.38	7.00	5.01	0.73
Self-regulation	2.33	6.67	4.88	0.85
Student Evaluation of Online Teaching Effectiveness (SEOTE)				
Student-faculty interaction	1.00	6.00	4.36	1.05
Student cooperation	1.00	6.00	4.55	0.98
Active learning	1.00	6.00	4.44	1.15
Time on task	.86	5.00	3.63	0.85

As it can be observed in Table 2, the analysis indicates that, when it comes to the MSLQ, the highest average means were determined for the *Self-efficacy* and *Intrinsic motivation* domains, while the lowest average mean was present in the *Test anxiety* domain. Concerning the SEOTE, the highest aver-

age means were determined for the *Student cooperation* and *Active learning* domains, while the lowest average mean was present in the *Time on task* domain.

In the next stage, the differences between male and female participants, according to the domain values of the two questionnaires (MSLQ and SEOTE), were examined by using a series of t-tests for independent samples. In Table 3, the values of t-tests and significance levels are presented, as well as arithmetic means and standard deviations, while the effect size is expressed by the Cohen's d coefficient.

As it can be observed in Table 3, the results of the t-tests show that the differences in the values

of arithmetic means of the two examined groups of participants in the MSLQ are present only in the *Cognitive strategy use* domain. By observing the table with arithmetic means, it can be concluded that female participants exhibit a higher average score compared to the male participants. The size of the difference for the *Cognitive strategy use* domain, expressed by the Cohen's d coefficient, equals to  $d=0.38$ . The effect size can be considered average. Concerning the SEOTE, the results show that there is no statistically significant difference in the values of the arithmetic means of the two observed groups of participants in all four domains.

Table 3. Gender differences in MSLQ and SEOTE

		Arithmetic mean	Standard deviation	t	df	p-level	d
Motivated Strategies for Learning Questionnaire (MSLQ)							
Self-efficacy	male participants	4.91	0.76	-1.963	220	.051	-
	female participants	5.13	0.66				
Intrinsic motivation	male participants	4.94	0.85	-1.434	220	.153	-
	female participants	5.13	0.77				
Test anxiety	male participants	4.21	1.00	-1.593	220	.113	-
	female participants	4.46	0.94				
Cognitive strategy use	male participants	4.77	0.67	-2.555	220	.001	0.38
	female participants	5.08	0.74				
Self-regulation	male participants	4.71	0.84	-1.570	220	.118	-
	female participants	4.93	0.85				
Student Evaluation of Online Teaching Effectiveness (SEOTE)							
Student-faculty interaction	male participants	4.40	1.01	0.179	220	.858	-
	female participants	4.37	1.05				
Student cooperation	male participants	4.57	1.01	0.141	220	.888	-
	female participants	4.55	0.98				
Active learning	male participants	4.54	1.19	0.579	220	.563	-
	female participants	4.43	1.13				
Time on task	male participants	3.63	0.90	-0.79	220	.937	-
	female participants	3.64	0.83				

\*d – Cohen's d, effect size measure



### Correlation between the MSLQ and SEOTE

To determine whether there is a connection between motivated strategies for learning and student evaluation of online teaching effectiveness, the Pearson's linear correlation coefficient was applied.

Based on the obtained results presented in Table 4, it can be concluded that there is a significant connection between the MSLQ domains and the majority of the SEOTE domains. The *Self-efficacy*, *Intrinsic motivation*, and *Self-regulation* domains of the MSLQ correlate with all SEOTE domains. The results indicate that these correlations are of low intensity and positive direction, ranging from 0.132 to 0.258. The students who have developed strategies of Self-efficacy, Intrinsic motivation, and Metacognitive self-regulation rate all parameters of online teaching higher.

Table 4. Correlation coefficients and significancy levels

	Self-efficacy MSLQ	Intrinsic motivation MSLQ	Test anxiety MSLQ	Cognitive strategy use MSLQ	Self-regulation MSLQ
Student-faculty interaction	.207**	.212**	.080	.158*	.144*
Student cooperation	.212**	.208**	.143*	.115	.132*
Active learning	.183**	.212**	.057	.127	.155*
Time on task	.220**	.258**	.109	.148*	.187*

\*\*\*p < .001, \*\*p < .01, \*p < .05

The *Test anxiety* domain establishes one statistically significant correlation with *Student cooperation* domain, with low intensity and negative direction. This indicates that the students who have test anxiety rate the *Student cooperation* domain lower in online teaching. The *Cognitive strategy use* domain correlates with two domains of the SEOTE

scale: *Student-faculty interaction* (r=.148) and *Time on task* (r=.158). The results indicate that these correlations are low in intensity and positive in direction, meaning that the students who use cognitive strategies more often give higher rates to the communication with the faculty and asses that they have spent more time completing the required tasks.

### Discussion

Both instruments in this research were tested for reliability by the Cronbach's alpha coefficient. The Motivated Strategies for Learning Questionnaire (MSLQ) was established as reliable, while the Student Evaluation of Online Teaching Effectiveness (SEOTE) was established as very reliable.

By exploring the subdomains of the MSLQ, it was determined that the domains of *Self-efficacy* and *Intrinsic motivation* were most relevant. Considering that self-efficacy represents students' beliefs in their own academic capabilities to master content, solve tasks, and persist in completing challenging activities (Bangert, 2004; Huang, 2008; Pajares, 2002; Zimmerman, 1995), it does not come as a surprise that this domain would exhibit high significance for motivation and strategy use. Similarly, intrinsic motivation reflects the students' internal motivation to succeed in learning (Pintrich and de Groot, 1990) because they find the subject matter interesting and relevant, exceeding the limits of instrumental academic goals. On the other hand, the *Test anxiety* domain exhibited the lowest scores, indicating that anxiety over achievement does not necessarily hinder motivation and strategy use, and is not as influential as other domains.

When it comes to the subdomains of the SEOTE, it was established that *Student cooperation* and *Active learning* domains were most significant. These results indicate that the evaluation of online learning is mostly influenced by activities in which students are able to participate actively and work with their peers. Active learning and cooper-

ation enable students to take control over the process (Bangert, 2004; Jonassen, 2003; Svinicki, 2002), exchange and compare ideas and possible solutions to exercises, and critically approach the activities by passing knowledge or adjusting their own views according to their peers' suggestions. On the other hand, the *Time on task* domain showed the lowest significance, implying that the time spent on solving tasks is not as important for the evaluation of online learning.

The research also explored whether there were any differences in motivation and strategy use or online learning assessment depending on the participants' gender. Regarding the motivated strategy use, female students reported that they had used cognitive strategies more often than male students. When it comes to the assessment of online teaching, no gender differences were established. Other studies that have dealt with this topic have obtained conflicting results. The most common findings are that female students tended to use rehearsal, organization, metacognition, time management skills, elaboration, and effort (Bidjerano, 2005). On the other hand, when considering studying with peers, help-seeking, and critical thinking skills, no significant differences were observed (Bidjerano, 2005). The uniformity of student attitudes towards online classes has also been confirmed by another research, which does not mention the gender dependence of this assessment (Chen and Hoshower, 2003). There is an unequal representation of male and female respondents within our sample, so additional studies are necessary for further conclusions.

Finally, the research also aimed to establish the connections between the online teaching assessment and the use of motivated strategies in learning. The results established that students who have developed strategies of self-efficacy, intrinsic motivation, and metacognitive self-regulation give higher rates to all parameters of online teaching effectiveness. These findings indicate that students who feel more confident in learning, have internal goals and

interests, and are able to self-regulate learning, also assess online teaching more positively. On the other hand, students who experience anxiety over testing tend to avoid cooperation with peers, probably because anxiety also lowers their willingness to interact socially. When it comes to cognitive strategy use, it correlated positively with student-faculty interaction and time on task, indicating that the learners who apply cognitive strategies more frequently rate communication with the teachers higher and report spending more time on mastering content and completing academic assignments. These findings imply that students who are able to apply cognitive strategies in learning also give more importance to their communication with teachers, probably because teachers are the ones who can help them in mastering these skills. Furthermore, the use of cognitive strategies implies spending more time on academic activities because strategies enable students to be more thorough and persistent in solving even more difficult tasks. To conclude, these findings imply that students with higher levels of self-efficacy, intrinsic motivation, self-regulation, and cognitive strategy use give higher rates to the overall quality of online teaching, while anxiety hinders social interaction and joint learning (the identification of these factors as most relevant corresponds to the findings of Pintrich & de Groot, 1990). In other words, teachers could improve the quality of their classes by working on developing the use of learning strategies and self-regulation skills, as well as raising their students' self-confidence and desire to participate in online activities. On the other hand, lowering anxiety in online settings can improve knowledge acquisition and, ultimately, student performance. Having in mind that the research determined group work and active learning as very important predictors of student satisfaction with online classes (which is in accordance with the findings of Bangert, 2006), teachers could work on developing activities which would require active participation of all students. Instead of focusing online teaching on recorded or real-time online lectures, and online tests or quizzes,

teachers could develop group assignments, such as joint seminar papers, oral presentations or practical projects, which could be presented in online environments. In turn, these cooperative tasks would require the application of different learning strategies and regulation of the learning process in which the teacher takes on the role of the facilitator, supporting the growing roles of students in the construction of their learning experience. As students take more control over their learning and are given more opportunities to work with each other, it may be expected that their anxiety level will spontaneously decrease. However, since the study established that test anxiety may negatively impact peer collaboration, teachers would need to closely supervise group assignments and provide support (for example, by setting up regular online meetings with all participants in a particular project).

## Conclusion

Distance learning is becoming more common in institutions of higher education. Considering the changes in education caused by the COVID-19 pandemic, and the development of ICT, there is an opportunity to improve distance learning. However, teachers have had to face many challenges in applying ICT effectively to design lessons and activities which would ensure active participation of students. By actively participating in lessons, students can monitor themselves by self-regulating and exerting control over their learning, taking responsibility, and directing the process.

The purpose of the research was to examine how students evaluate online teaching, and to what extent they apply strategies in their learning process, while also aiming to determine the connections between the students' evaluation of teaching and their use of strategies. The SEOTE was used to examine the student's evaluation of online teaching effectiveness, while the MSLQ was used to examine the use

of motivated learning strategies. The questionnaires ranged from reliable to very reliable.

The research established that the MSLQ's most relevant domains include *Self-efficacy* and *Intrinsic motivation*, while the *Test anxiety* domain was the least relevant. The SEOTE's most significant domains include *Student cooperation* and *Active learning*, while the *Time on task* domain was the least significant. These results suggest that the motivated learning strategies are mostly influenced by students' self-confidence and internal motivation for learning, while the assessment of online teaching effectiveness mostly depends on activities which enable peer cooperation and active participation. The research also investigated if the students' gender influenced the use of motivated learning strategies and distance learning assessment. No differences were found in distance learning assessment, while female students reported more frequent use of cognitive strategies compared to male students.

When it comes to the interplay of online teaching effectiveness and motivated learning strategies, the results established that students who are more confident in learning, set intrinsic goals, and are able to self-regulate, give higher rates to online teaching effectiveness. Moreover, students who report using cognitive strategies more frequently attach more importance to their interaction with teachers and the time they spend on completing tasks. On the other hand, students who feel anxious about testing report the lack of desire to work with peers in class. These results indicate that students who are more confident, internally motivated and self-regulated, and who use cognitive strategies more often, tend to assess online teaching as more effective compared to others, while anxious students feel discouraged to participate in joint work. Taking these results into consideration, teachers need to work on developing different sets of skills with their students, while trying to lower anxiety in learning, in order to facilitate the successful acquisition of knowledge and high academic performance.

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## МОДЕРАЦИЈА УЛОГЕ СТРАТЕГИЈА УЧЕЊА КРОЗ СТУДЕНТСКУ ПРОЦЕНУ УЧЕЊА НА ДАЉИНУ

Учење на даљину је све више заступљено у установама високог образовања. Чешћа употреба информационих и комуникационих технологија (ИКТ), посебно током пандемије вируса корона (КОВИД-19), омогућава унапређење учења на даљину, истовремено мотивишући наставнике да ефикасно примењују ИКТ у осмишљавању интерактивних предавања која би активно укључила све студенте у наставу. Студенти би требало да траже и усмеравају свој процес учења саморегулацијом, односно преузимањем одговорности за своје учење.

На основу досадашњих истраживања, саморегулишући и вршећи контролу над својим учењем, студенти би требало да буду активни учесници у свом процесу учења. Активно учење, праћено интерактивним присуством учењу као друштвеној димензији, побољшаће развој саморегулације и вештина самофацилијације, које су главне компетенције међакогниције. Студенти са развијеним међакогнивним вештинама су академски успешнији, зато што разумеју и контролишу своје размишљање и процесе учења.

„Нова нормалност“, тојово као нова парадигма, утиче на раније утврђене научне чињенице о процесу учења. Неопходно је истражити какав утицај има измењени присуств настави изазван пандемијом КОВИД-19 на успех у учењу.

Циљ истраживања је да се испита студентска евалуација учења на даљину, као и стратегије које се примењују у процесу учења, уз утврђивање везе између њихове процене и употребе стратегија. Студентска евалуација ефикасности онлајн-наставе (енг. Student Evaluation of Online Teaching Effectiveness – SEOTE) коришћена је за испитивање процене наставе на даљину, док је Упитник о мотивисаним стратегијама за учење (енг. Motivated Strategies for Learning Questionnaire – MSLQ) коришћен за испитивање употребе мотивисаних стратегија учења.

Седам принципа ефикасне наставе, које су конструисали Чикерини и Гамсон (Chickering and Gamson, 1987), представљају најпознатију листу варијабли које утичу на учење. Успех учења зависи од комуникације између студената и наставног особља, сарадње међу студентима, активног учења, брзе повратне информације, времена provedеног у решавању задатака, високих очекивања, и поштовања различитих талената и начина учења. Већина наставних активности заснованих на ових седам принципа је у складу са активним учењем, промовишући ефикасно учење у којем студенти могу да повежу своја искуства са претходним знањем. Ауθενичне наставне активности олакшавају достизање високих очекивања студената. Сврха конструисаних наставе је обликовање и управљање ис-

кусitivityма сityуденатia ради itодсityицања акivityноit размишљања о насityавним jединицама. Сityуденити би itредало да буде креатivityвни учесник који, у сарадњи са вршњацима и насityавницима, има улогу у иcityиcityреми, иcityанирању, реализацији и евалуацији иcityоцеса учења.

Узорак у овом иcityиcityживању обухватитио jе 226 сityуденатia Универзитетia у Новом Сагу. Око 77% су били иcityиcityаници женскоit иcityола. У иcityренуитику иcityиcityуњавања анкетите највећи иcityоценатити учесника jе био на другуити jедини сityудија – 50,4%, док jе сityуденатia иcityрве jедине било 8,4%. Такође, иcityрећу jедину иcityохађало jе 16,4% сityуденатia, а четитвртити 18,1%. Само 6,6% сityуденатia jе било на иcityетити jедини сityудија.

Примењене су метитоде дескриптитивне сityаитииситиике да би се уитврдиле мере центитралних иcityнденција, варијабилности и екситремнох вредности иcityосмаитираних нумеричких карактитериситиика. У домену уcityоредне сityаитииситиике иcityримењене су следеће иcityехнике: иcityи-иcityетити за независне узорке и Пирсонов коефицијентити линеарне корелације. Мера унутитирашње конзиситентитиности изражена Крондаховим алфа коефицијентитиом коришћена jе за иcityоцену иcityоузданоситии скале у целини.

Резултитаити иcityоказују да сityуденити који имају више самоиcityоуздања у учењу, себи иcityоситиављају циљеве, и умеју да се саморетитиулишу, иcityозиитивније оцењују насityаву на даљину. Поред иcityоити, сityуденити који користите коитиитиивне сityиcityаитиетитије уиcityавном комуникацију са насityавницима иcityозиитивно оцењују и наводе да иcityроводе више времена у савладавању насityавноит садржаја и извршавању задатитака. С другуе сityиране, сityуденити који су анксиозни иcityред иcityетити честити издеитиавају рад са вршњацима. Ови резултитаити указују на иcityто да сityуденити са вишим нивоом самоефикасности, унутитирашње моитиивације, саморетитиулације и који чешити иcityримењују сityиcityаитиетитије учења дају веће оцене укуитином квалитиитетитиу насityаве на даљину, док анксиозноситии ометити друшитиивену иcityиcityеракцију и заједничко учење.

**Кључне речи:** сityиcityаитиетитије учења, метитиакотитиитиивна саморетитиулација, моитиивација, учење на даљину